

Case Report

Entrapped foreign body: A diagnostic muddle for the radiologist

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Abstract

Exact localization of foreign body is important for planning the treatment required for its retrieval without much tissue damage. Plain film radiography is the initial screening modality used for the detection of suspected foreign body. However, about one-third of all the foreign bodies are missed in the initial radiographic examination. In case of a wooden foreign body, only 15% are well-visualized on plain radiographs and are, therefore, often missed or misdiagnosed. Hence, the different radiographic technique should be used to localize the object instead of relying on a single radiographic image. Here, we present a unique case of foreign body entrapped in the soft tissue appeared initially as osteomyelitis and fracture of the mandible in the digital panoramic radiograph, and finally detected as a foreign body in mandibular occlusal radiography.

Key words: Foreign body, mandible, soft tissues, wooden

INTRODUCTION

Foreign bodies are quite common in the oral and maxillofacial region. Radiopaque objects such as teeth, metals, and gravels are easily detectable in the radiograph. However, nonradiopaque objects such as wood particles are difficult to locate.^[1,2] Sometimes, advanced imaging modalities such as computed tomography (CT), and magnetic resonance imaging (MRI) are required to correctly detect and locate the position of foreign bodies.^[3] In many instances, CT and MRI may not be available in the dental office and hospitals for the detection of foreign bodies. In such situations, it is important to use various available conventional radiographic techniques for the localization of foreign bodies. Plain film radiography is the initial screening modality used for the detection of suspected foreign body.^[4] In the case of a wooden foreign body, only 15% are well-visualized on plain radiographs and are therefore often missed or misdiagnosed. Hence, different radiographic technique should be used to localize the object instead of relying on a single radiographic

image. This unique case illustrates the importance of using different radiographic modalities to detect the presence of retained foreign bodies using conventional radiographic technique.

CASE REPORT

A 35-year-old male patient, a carpenter by profession reported to our department with swelling and pain on the left mandible since 3 weeks [Figure 1]. He met an accident 1 month before while polishing the furnished wood in the workplace and lost his consciousness due to hit of the wooden piece on the face during the incident. He had taken to the Primary Health Centre by the coworkers and received the emergency care. Only the deep wound on the face was sutured without any imaging investigation. After 1 week swelling formed on the left mandible with difficulty

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in opening mouth and associated pain. Extra orally, a vertically placed wound scar with suture marks of approximately 6 cm in length is seen extending from a line joining the ala-tragus line toward the lower border of mandible [Figure 2]. Swelling over the left mandible was tender and hard in consistency. Mouth opening was < 10 mm making it difficult to examine intraorally. A digital panoramic radiography was taken, which showed multiple faint mixed radiopaque radiolucent appearances in the periapical region of mandibular left first permanent molar and second molar with a radiolucent line in between giving the radiographic feature of osteomyelitis and fracture of the jaw [Figure 3]. On careful examination, tiny multiple radiopaque spots are seen on the radiograph within the area of interest having a glittering appearance. To assess whether any breach in the lower cortex and also to ascertain what exactly the glittering thing was, a mandibular occlusal radiograph was taken. In

the occlusal radiograph, well-defined multiple linear radio opaque structure of approximately 4 cm long and 5 mm wide not contacting the bone was detected [Figure 4]. With the patient under general anesthesia, the involved area was explored intraorally and multiple pieces of the fractured polishing disc were retrieved [Figure 5]. The wound was irrigated and closed by layer. The patient had an uneventful recovery in the postoperative period with improvement in mouth opening and reduction of swelling and pain in the left mandible [Figures 6-8].

DISCUSSION

This unique case is an example illustrating the variations seen in the appearance of retained foreign bodies in different radiographic images. The retained wooden foreign body was initially missed in the digital panoramic radiograph and its radiographic appearance was misinterpreted.



Figure 1: A 35-year-old male patient presented with swelling on the left mandible



Figure 2: Wound scar and suturing mark seen on the left part of face



Figure 3: Digital panoramic radiography showing mixed radiopaque radiolucent appearance on the root apex of mandibular left first molar and second molar



Figure 4: Mandibular occlusal radiography showing well defined linear radiopacity not contacting the bone

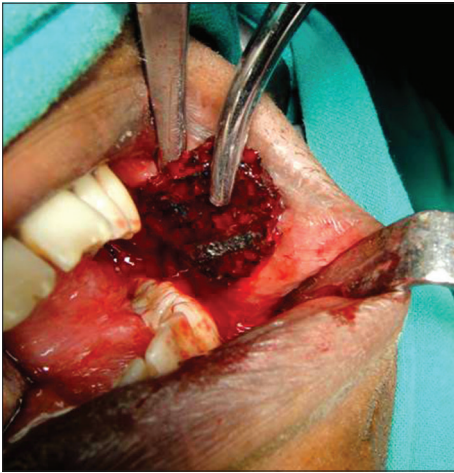


Figure 5: Surgical removal of retained foreign body under general anesthesia

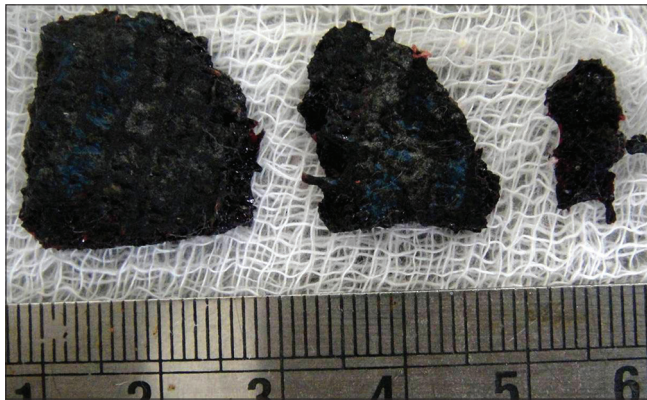


Figure 7: Retrieved pieces of polishing disc

Since wood is an organic material with low density only 15% of wooden foreign bodies are well visualized in the radiographs.^[1] Plain radiographs are almost unable to detect their presence in soft tissues unless they are associated with a radiopaque substance. Retained foreign body retrieved from the patient was a polishing disc made of wood with small particles of lead incorporated in it. This might be penetrated deep into the vestibule extra orally during the accident and the left sutured in the place from the Primary Health Centre. The detection of wood is, especially important because it can serve as an unrecognized medium for infection. Wood, with its porous consistency is an excellent medium for microorganisms, and the retained wooden foreign matter may result in cellulitis, abscess, or fistula formation. The wooden foreign matter may also result in synovitis or osteomyelitis if joint or adjacent osseous structures become involved.^[2,3] History and clinical presentation of the patient gave the impression of mandibular fracture, and the digital panoramic radiograph was justifying the diagnosis with radiographic appearance mimicking osteomyelitis. Incorporated lead in the disc

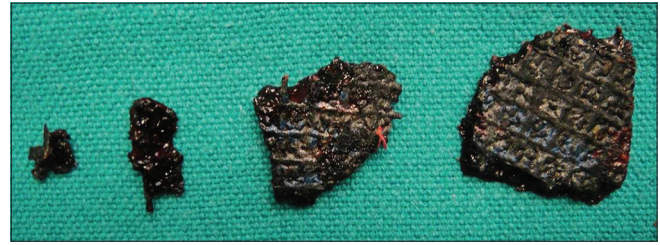


Figure 6: Retrieved pieces of wooden polishing disc



Figure 8: Postoperative digital panoramic radiography after the removal of foreign body

giving the glittering appearance and the possibility of fracture made us to think about exposing the region with occlusal radiography [Figure 9]. Our case also highlights the limitations of panoramic radiography in such situations due to magnification and low resolution when compared with intraoral radiographs.^[4] In this case, occlusal radiography provided the resolution needed to characterize the borders and internal structure of the wooden particle accurately.

A radiologist must be aware of various radiographic appearances of foreign bodies [Figure 10]. Plain film radiograph is a two-dimensional representation of three-dimensional object, a radiologist can derive three-dimensional information about the object using various radiographic methods.^[5] Sometimes, simple conventional radiographic technique will be quite effective in the localization of such foreign bodies. It should be mandatory to screen the patients with suspected injuries using different radiographic techniques to rule out the presence of retained foreign bodies.

Foreign body entrapment may be common, but the uniqueness lies in the nerve wrecking task of incorporating the wide spectrum of unimaginable materials that could cause the entrapment. The

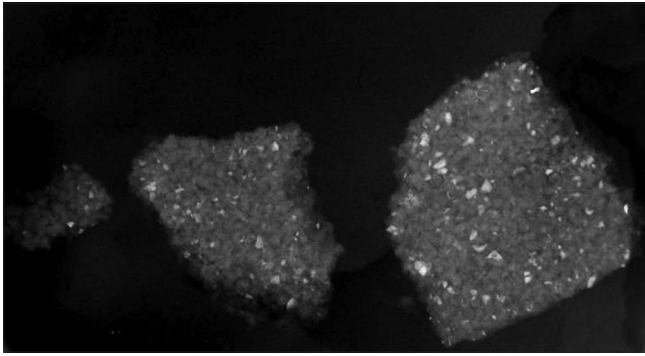


Figure 9: Radiograph of wooden polishing disc showing glittering appearance due to incorporated lead particles

nature of the materials could be challenging even for a seasoned radiologist to apply the right permutations and combination of radiographic imaging modalities to overcome the clinical and radiological diagnostic dilemma.

Teaching point

A radiologist must be aware of various radiographic appearances of foreign bodies. Sometimes simple conventional radiographic technique will be quite effective in the localization of such foreign bodies. It should be mandatory to screen the patients with suspected injuries using different radiographic techniques available to rule out the presence of retained foreign bodies.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.



Figure 10: Posterior-anterior radiograph of retained foreign body in the left mandible region

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Conflicts of interest

There are no conflicts of interest.

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